

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA**

CARNEGIE MELLON UNIVERSITY,

Plaintiff,

v.

MARVELL TECHNOLOGY GROUP, LTD.,
and MARVELL SEMICONDUCTOR, INC.,

Defendants.

Civil Action No. 2:09-cv-00290-NBF

**MARVELL'S MEMORANDUM IN SUPPORT OF ITS RENEWED MOTION FOR
JUDGMENT AS A MATTER OF LAW OF NO WILLFUL INFRINGEMENT**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. LEGAL STANDARDS	4
A. Judgment as a Matter of Law.....	4
B. Willful Infringement	5
III. CMU'S WILLFUL INFRINGEMENT CLAIM SHOULD BE DISMISSED AS A MATTER OF LAW	7
A. CMU Cannot Meet Its Burden on the Threshold Requirement of Objective Recklessness	7
1. CMU Would Not Have Waited Nearly Six Years Before Filing Suit If This Case Was Clear-Cut.....	8
2. The Inventors' Admissions Regarding the Scope of Their Patents Confirm the Reasonableness of Marvell's Non-Infringement Contentions	8
3. Marvell Has Already Demonstrated that this Case Is at Least a "Close Call" on Invalidity.....	11
4. CMU's Arguments Do Not Warrant a Different Conclusion with Respect to No Objective Recklessness	12
B. No Reasonable Jury Could Find that Marvell Had the Required Subjective Intent for Willful Infringement	13
1. CMU Acknowledges that Marvell Is a Technology Innovator.....	13
2. CMU's Failure to Follow-Up on Its 2003 Licensing Letters Reinforced Marvell's Subjective Good Faith Intent.....	14
3. CMU Has Failed to Show that Marvell Copied Any Part of the Asserted Claims	15
4. The Testimony of Marvell's Witnesses Regarding the Development of Their Invention Conclusively Rebut Any Allegation of Copying.....	17
IV. CONCLUSION.....	20

Pursuant to Federal Rule of Civil Procedure 50(a), Defendants Marvell Technology Group, Ltd. and Marvell Semiconductor, Inc. (collectively, “Marvell”) respectfully renews its motion for entry of judgment as a matter of law of no willful infringement.¹

I. INTRODUCTION

Plaintiff Carnegie Mellon University (“CMU”) has failed to meet its clear and convincing burden on willfulness. To establish willful infringement under the Federal Circuit’s *en banc* decision in *In re Seagate Technologies, LLC*, 497 F.3d 1360 (Fed. Cir. 2007), CMU must prove that (1) Marvell acted despite an objectively high likelihood that its actions constituted infringement of a valid patent, and (2) this objectively-defined risk was either known or so obvious that it should have been known to Marvell. CMU does not have sufficient evidence on either the objective or subjective prong of the recklessness standard under *Seagate*. Therefore, Marvell is entitled to judgment as a matter of law on CMU’s willful infringement claim.

Objective Prong: As a threshold matter, CMU cannot meet its burden that Marvell’s non-infringement and invalidity contentions are “objectively baseless” in order to satisfy the first prong. The Court has already determined that Marvell does not infringe the originally-asserted Group II claims. And for the Group I claims, Marvell’s defense of non-infringement is squarely grounded in the express claim language as construed by the Court, the disclosures in the specification of the asserted patents, and the pre-litigation statements of the inventors. Prior to this lawsuit, the inventors acknowledged that their patented solution to the signal dependent noise problem is “optimal,” but “complex,” and that others continued to develop “sub-optimal” solutions for use in commercial applications. Most notably, Dr. Kavcic distinguished the

¹ Marvell filed its initial motion for judgment as a matter of law of no willful infringement on December 11, 2012. (Dkt. No. 700.) Marvell may renew, supplement, and/or otherwise modify this motion in response to any additional evidence, arguments, or other submissions in this case.

methods claimed in the asserted patents from a model in which a prior art Viterbi detector is combined with a post-processor. This distinctive post-processor solution is exactly what Marvell uses in the accused chips that incorporate an MNP. Similarly, for the accused chips that incorporate an NLV, Marvell uses a pre-filter solution with a conventional Viterbi detector that is well outside the scope of the asserted claims.

In its opposition , CMU argues “that the Court’s inquiry into objective recklessness must focus on Marvell’s prelitigation conduct and defenses.” Dkt. No. 721 at 4-8. That argument is an incorrect statement of the law. The Federal Circuit’s decision in *Bard Peripheral Vascular, Inc. v. WL Gore & Assocs., Inc.*, 682 F.2d 1003 (Fed. Cir. 2012) could not be clearer regarding the required analysis for the objective prong. As the Federal Circuit explained in *Bard*, the determination of objective recklessness “entails an objective assessment of potential defenses based on the risk presented by the patent. Those defenses may include questions of infringement but also can be expected in almost every case to entail questions of validity that are not necessarily dependent on the factual circumstances of the particular party accused of infringement.” *Id.* at 1006. The Court analogized this analysis to “the Supreme Court’s precedent on ‘sham’ litigation.” *Id.* at 1007. “If an objective litigant could conclude that the suit is reasonably calculated to elicit a favorable outcome, it is **not** objectively baseless.” *Id.* (emphasis added). Consistent with this standard on the objective prong, the Federal Circuit directed the district court on remand to “determine ***based on the record ultimately made in the infringement proceedings***, whether a reasonable litigant could realistically expect [its] defenses to succeed.” *Id.* at 1008 (emphasis added). Indeed, the Federal Circuit acknowledged that “[f]ollowing Seagate, this court established the rule that generally the ‘objective’ prong of Seagate **tends not to be met** where an accused infringer relies on a reasonable defense to a charge

of infringement.” *Id.* at 1005 (quoting *Spine Solutions, Inc. v. Medtronic Sofamor Danek USA, Inc.*, 620 F.3d 1305, 1319 (Fed. Cir. 2010) (emphasis added).

Thus, under *Bard*, the evaluation of the objective prong requires the district court to determine whether the defenses and counterclaims in the pending litigation are objectively baseless, or not. This objective analysis does not require the court to evaluate whether the defendant had claims and defenses available “at the time [alleged] infringement began,” as CMU contends. *See* Dkt. No. 721 at 4-5. Accordingly, the standard for objective recklessness that CMU articulates in its opposition is incorrect and invites legal error.

Additionally, Marvell has already established that its invalidity defense is objectively reasonable. In ruling on Marvell’s motion for summary judgment of anticipation, the Court noted that the issue was a “close call.” In fact, Marvell’s defense was so strong that CMU abandoned its original assertion that it was the first to take correlated and signal-dependant noise into account via modified branch metrics in a Viterbi-like detector for signal detection in hard disk drives. These facts alone establish that Marvell’s invalidity defense is not “objectively baseless” such that no “reasonable litigant could realistically expect” the defense to succeed.

This is not a case that is so straightforward that the defenses of non-infringement and invalidity give rise to a finding of objective recklessness. Otherwise, CMU would have taken action immediately against Marvell, rather than waiting nearly six years (just until the laches period was about to expire) before ultimately filing suit. The objective prong is a threshold issue for the Court that is dispositive of CMU’s willfulness claim. Judgment as a matter of law of no willful infringement is warranted on this basis alone.

Subjective Prong: Likewise, CMU cannot meet its burden on the subjective prong. Marvell is a recognized innovator in the industry, as CMU itself acknowledges. Marvell

developed and patented its own solutions to the signal dependent noise problem, which it then incorporated into the accused chips. As such, there is absolutely no evidence in the record that Marvell subjectively intended to copy the asserted claims. In particular, CMU has attempted to raise an inference of copying by pointing to Marvell documents that make reference to Dr. Kavcic or the Kavcic model. But these bare references fall far short of establishing subjective intent to copy. Indeed, notably absent from CMU’s presentation is any evidence or testimony suggesting that Marvell copied any specific embodiment of the asserted claims. Without that link to the claims, CMU’s alleged copying evidence is irrelevant to subjective intent. *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1366 (Fed. Cir. 2001) (“[E]vidence of copying [the patentee’s product] is legally irrelevant unless the [product] is shown to be an embodiment of the claims.”).

If anything, CMU’s offer to license the patents to Marvell in 2003 without any follow-up over the next six years lulled Marvell into believing that there was no issue of infringement, thereby reinforcing Marvell’s subjective good faith intent. Marvell is entitled to judgment as a matter of law of no willfulness for this additional reason.

II. LEGAL STANDARDS

A. Judgment as a Matter of Law

Judgment as a matter of law is appropriate where a party has been fully heard and “there is no legally sufficient evidentiary basis for a reasonable jury to have found for that party with respect to that issue.” Fed. R. Civ. P. 50(a); *see also Marten v. Hunt*, 479 F. App’x 436, 439 (3d Cir. 2012) (“[T]hat a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue.”); *Alvin v. Calabrese*, 455 F. App’x 171, 177 (3d Cir. 2011) (“A motion for judgment as a matter of law is mandated where the facts and the law will reasonably support only one conclusion.”) (internal citations omitted). “[A] scintilla of evidence will not

enable the non-movant to survive a Rule 50 motion” for judgment as a matter of law. *Goodman v. Pennsylvania Tpk. Comm’n*, 293 F.3d 655, 665 (3d Cir. 2002) (citing *Lightning Lube, Inc. v. Wifco Corp.*, 4 F.3d 1153, 1166 (3d Cir. 1993)); see also *Bryan v. Comm’r of Soc. Sec.*, 383 F. App’x 140, 145 (3d Cir. 2010) (“[S]ubstantial evidence is more than a mere scintilla but may be somewhat less than a preponderance of the evidence.”) (internal citations omitted).

B. Willful Infringement

A patentee may obtain enhancement of up to three times compensatory damages if it establishes, by clear and convincing evidence, that the defendant willfully infringed its patent. See *In re Seagate Tech, LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007).

In an *en banc* decision, the Court of Appeals for the Federal Circuit raised the legal standard of proof for willfulness from mere negligence to recklessness. *Id.* at 1370-71. In *Seagate*, the Court acknowledged that its earlier decisions had set “a lower threshold for willful infringement that is more akin to negligence.” *Id.* at 1371. Believing this to be inconsistent with the Supreme Court’s decision in *Safeca Ins. Co. v. Burr*, 127 S. Ct. 2201 (2007), which interpreted the term “willful” in another civil context, the Federal Circuit overruled its earlier decisions and elevated the standard for willfulness in patent cases to require proof of recklessness. *Seagate*, 497 F.3d at 1371. In doing so, the Federal Circuit cracked down on patentees who make unsubstantiated claims for enhanced damages based on conclusory allegations of willful infringement.

Under *Seagate*, a patentee must establish two separate elements in order to prove willfulness. First, it must prove that the accused infringer “acted despite *an objectively high likelihood that its actions constituted infringement of a valid patent.*” *Id.* (emphasis added). The state of mind of the accused infringer is “not relevant to this objective inquiry.” *Id.* Second, “[i]f this threshold objective standard is satisfied, the patentee must also demonstrate that this

objectively-defined risk was either *known or so obvious that it should have been known to the accused infringer.*” *Id.* (emphasis added). The patentee bears the burden of proving these two elements by clear and convincing evidence. *Id.*

In addition to raising the burden of proof, the Federal Circuit addressed the burden of production with respect to willfulness. In its earlier cases, the Court had placed the initial burden on the accused infringer to produce evidence of good faith or face a presumption that it had willfully infringed. *See, e.g., Underwater Devices, Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 1389-90 (Fed. Cir. 1983); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 1580 (Fed. Cir. 1986). In *Seagate*, the Court reversed course and placed the burden of production squarely on the patentee to show that the accused infringer acted willfully. 497 F.3d at 1371.

Thus, *Seagate* heightened (and clarified) the standard for willfulness in several important ways: (1) the patentee must show that the defendant acted recklessly based on an objective standard; (2) the patentee must then show that the defendant subjectively knew or should have known of the objectively high risk of infringing a valid patent; (3) the patentee bears the burden of proving (1) and (2) by clear and convincing evidence; and (4) the patentee bears the burden of production with respect to its allegations of willful infringement. *Id.*

In a recent decision, the Federal Circuit further clarified the allocation of decision-making authority for the objective prong of the willfulness inquiry. *Bard Peripheral Vascular, Inc. v. WL Gore & Assocs., Inc.*, 682 F.3d 1003, 1006-1007 (Fed. Cir. 2012). The Federal Circuit explained that “the court is in the best position for making the determination of reasonableness.” *Id.* at 1006. The Court held that “the objective determination of recklessness, even though predicated on underlying mixed questions of law and fact, is best decided by the judge as a question of law.” *Id.* at 1007. As such, “the ultimate legal question of whether a

reasonable person would have considered there to be a high likelihood of infringement of a valid patent should always be decided as a matter of law by the judge.” *Id.*

Moreover, if the threshold objective prong cannot be met, the Court should not put the issue of willfulness – including the second “subjective” prong – to the jury. *See Powell v. Home Depot USA, Inc.*, 663 F.3d 1221, 1236 (Fed. Cir. 2011) (“Since *Seagate*, [the Federal Circuit] has required patentees to prove the objective prong of the willful infringement inquiry by clear and convincing evidence *as a predicate to the jury’s consideration of the subjective prong* Should the court determine that the infringer’s reliance on a defense was not objectively reckless, *it cannot send the question of willfulness to the jury*, since proving the objective prong is a predicate to consideration of the subjective prong.”) (emphasis added); *see also Tarkus Imaging, Inc. v. Adobe Sys., Inc.*, C.A. No. 10-63-LPS, 2012 WL 2061932, at *2 (D. Del. June 5, 2012).

III. CMU’S WILLFUL INFRINGEMENT CLAIM SHOULD BE DISMISSED AS A MATTER OF LAW

CMU has failed to introduce sufficient evidence to meet its clear and convincing burden with respect to both: (1) whether Marvell acted recklessly from an objective point of view, and (2) whether Marvell subjectively knew or should have known of that objectively high risk. Because CMU has failed to make the requisite showing with respect to either prong of the *Seagate* standard, judgment as a matter of law is warranted.

A. CMU Cannot Meet Its Burden on the Threshold Requirement of Objective Recklessness

CMU cannot establish that Marvell’s non-infringement and invalidity contentions are “objectively reckless” in light of the record in this case. Marvell should not have to spend time at trial rebutting CMU’s contentions on willfulness (along with its corresponding threat of treble damages) in light of CMU’s complete failure of proof on the objective prong. Instead, CMU’s willful infringement claim should be dismissed as a matter of law.

1. CMU Would Not Have Waited Nearly Six Years Before Filing Suit If This Case Was Clear-Cut

Here, there can be no finding of “objective recklessness” in light of CMU’s own delay in filing this lawsuit. If the case for infringement was so straightforward that any defense would be objectively reckless, there would have been no reason for CMU to wait so long before taking action. Instead, CMU sat on its hands for nearly six years. As early as April 5, 2003, the inventors had heard rumors that chip vendors, such as Marvell, might be using the patented technology “to tackle media noise.” DX-212. On August 5, 2003, CMU sent out letters to seven major electronics companies, including Marvell, offering to license the patents in suit. DX-225 – DX-235, DX-1573, P-422, P-431. But after receiving no takers, CMU did nothing to follow up. 11/28/12 Cohon Tr. 208:10-15, 226:4-10, 229:2-6; 12/5/12 Wooldridge Tr. at 152:10-154:11, 170:10-172:15, 176:22-177:17, 242:20-243:3. That is hardly the behavior of a patentee that has a slam-dunk infringement claim. Only as the six-year laches date approached (and after the inventors had asked CMU for a release of the patents to pursue claims on their own) did CMU eventually take action. *See* DX-306; 11/29/12 Moura Tr. 103:3-6, 106:10-22, 107:20-108:4; 11/30/12 Kavcic Tr. 147:14-24. Even then, CMU waited until the eve of the laches cut-off – at 5 years and 11 months – before filing suit. *See* 11/29/12 Moura Tr. 113:9-12 (Q. [B]ack in 2008, did you have an understanding that if there was any delay in filing a lawsuit that it could be a problem? A. Yes.”). CMU’s prolonged failure to act strongly suggests that this case is, at the very least, a close call.

2. The Inventors’ Admissions Regarding the Scope of Their Patents Confirm the Reasonableness of Marvell’s Non-Infringement Contentions

Likewise, as set forth in Marvell’s concurrently-filed Motion for Judgment as a Matter of Law on Non-Infringement, there are multiple reasons why CMU’s infringement claims should be

dismissed as a matter of law. In particular, CMU has failed to meet its burden of proof with respect to multiple limitations of the asserted claims that are not found in the accused chips and simulators. For example, CMU has failed to introduce sufficient evidence that the accused chips use a “Viterbi-like” detector that determines branch metric values for branches of a trellis or that performs either the “selecting” or “applying” steps of the asserted claims. Similarly, CMU has a complete failure of proof that the accused simulators are “detectors” that are even capable of practicing the claimed methods at all – a necessary predicate to any finding of infringement. Finally, CMU has failed to meet its burden with respect to indirect infringement that Marvell had the requisite specific intent to contribute to or induce infringement of the asserted claims. At the very least, these arguments provide a colorable basis why Marvell has not infringed any valid claim, and thereby defeat any allegation of “objective recklessness.” As the Federal Circuit recently explained, “[i]f the accused infringer’s position is susceptible to a reasonable conclusion of no infringement, *the first prong of Seagate cannot be met.*” *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1310 (Fed. Cir. 2011) (emphasis added).

Here, the asserted patents are directed to an optimal implementation that the inventors and others in the field recognized was complex and difficult, if not impossible, to implement in an actual chip. 11/29/12 Moura Tr. at 88:6-12 (“Our patent is; so it’s recognized by the experts in the field that it’s the optimal implementation, which we also claim.”); DX-1522 (“patent is optimal s/n,” “optimal implementation is complex”); 11/30/12 Kavcic Tr. at 125:11-126:23; DX-63 (“Clearly, the expression in 14 is too complicated for implementation in a detector.”). Even today, not a single company has ever paid royalties to use the patented technology in a commercial product. 11/28/12 Cohon Tr. 229:7-11. Instead, the inventors were aware that others were working on “sub-optimal” solutions that could be implemented commercially. DX-

1522 (“people are working on suboptimal”); 11/29/12 Moura Tr. at 88:24-89:16. For example, in an October 8, 2001 email, Dr. Kavcic distinguished the claimed invention from a system incorporating a post-processor solution in combination with a traditional Viterbi detector. DX-189; 11/30/12 Kavcic Tr. 84:5-89:4. As Dr. Kavcic explained:

Yes, we address the ‘data dependent’ nature of the algorithm. We call it the ‘signal dependent’ nature. **The data dependence is in the trellis and NOT in the post processor.**

Id. (emphasis added). As Dr. Kavcic further explained, during prosecution of the asserted patents, the examiner required the applicants to distinguish the claimed invention from a post processor solution by “writ[ing] extra material to make sure that we do not use a post processor, which is a patent by Kelly Fitzpatrick.” *Id.*

Here, the accused Marvell MNP chips incorporate exactly this type of post-processor solution that Dr. Kavcic himself understood to be distinguishable from the claimed invention in this case. Indeed, Marvell obtained two patents for its MNP post-processor alternative after expressly citing and distinguishing the two asserted Kavcic patents and an article describing the complex Kavcic model. DX-266, DX-287. And when Kavcic and Moura evaluated the accused Marvell technology in a 2008 article, they described it as “novel.” DX-310 (“We discusses [sic] in Section III channel detectors: novel detectors capable of combating media noise have been introduced.”). Marvell’s non-infringement contentions on this issue cannot be “objectively reckless” if the inventors of the asserted patents reached the same conclusion regarding the scope of the asserted patents and distinguished the type of post-processor solution that CMU now accuses of infringement.

3. Marvell Has Already Demonstrated that this Case Is at Least a “Close Call” on Invalidity

The Court has already recognized that Marvell’s motion for summary judgment of the Group I claims was a “close call.” Dkt. 306 at 1 (“Although it was a ‘close call,’ for reasons stated more fully herein, Marvell’s motion [218] is DENIED.”); *see also* Dkt. 337 at 4 (“Although it was a close case, the Court found that the ‘251 Patent did not anticipate the Group I claims.”). Indeed, Marvell’s invalidity defense was so strong that CMU abandoned its original position that it was the first to take correlated and signal-dependant noise into account via modified branch metrics in a Viterbi-like detector.

The fact that Marvell has already presented a close case of anticipation means that its defense is not “objectively baseless.” *See, e.g., Depuy Spine, Inc. v. Medtronic Solamor Danek, Inc.*, 567 F.3d 1314, 1336 (Fed. Cir. 2009) (granting JMOL of no willfulness where “the question of equivalence was a ‘close one’”); *Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1374 n.4 (Fed. Cir. 2008) (holding that “the proper claim construction was a sufficiently ‘close question’ to foreclose a finding of willfulness”).² Nothing the jury could decide at trial would change the fact that Marvell has already presented a credible invalidity defense. Thus, a finding of willfulness in this case is foreclosed as a matter of law.

² *See also Spine Solutions, Inc. v. Medtronic Solamor USA, Inc.*, 620 F.3d 1305, 1319-20 (Fed. Cir. 2010) (reversing denial of defendant’s judgment as a matter of law of no willfulness, where the district court had already expressly noted that the defendant’s obviousness arguments were “reasonable”); *Honeywell Int’l Inc. v. Universal Avionics Sys. Corp.*, 585 F. Supp. 2d 636, 644 (D. Del. 2008) (The threshold requirement is not met where the accused infringer’s arguments are “substantial, reasonable, and far from the sort of easily-dismissed claims that an objectively reckless infringer would be forced to rely upon.”).

4. CMU's Arguments Do Not Warrant a Different Conclusion with Respect to No Objective Recklessness

CMU argues throughout its opposition that Marvell's motion should be denied because it allegedly failed to follow its own policies to consult with an attorney or obtain an opinion of counsel. *See* Dkt. No. 721 at 5-6, 9-10. But as the Federal Circuit has held *en banc*, "there is no affirmative obligation to obtain [an] opinion of counsel." *In re Seagate Technology*, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (*en banc*), *cert. denied*, 128 S. Ct. 1445 (Feb. 25, 2008). And no adverse inference may be drawn from the failure to obtain an opinion. *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337, 1345 (Fed. Cir. 2004) (*en banc*) ("In tandem with our holding that it is inappropriate to draw an adverse inference that undisclosed legal advice for which attorney-client privilege is claimed was unfavorable, we also hold that it is inappropriate to draw a similar adverse inference from failure to consult counsel.").

In any event, contrary to CMU's argument, Dr. Wu did consult with in-house counsel regarding the patents-in-suit. *See, e.g.*, 12/11/2012 Wu Tr. at 323:9-323:22. As Dr. Wu testified:

Q. Okay. Back in 2002 when you became aware of Dr. Kavcic's patent, did you review the patent at that time?

A. I reviewed the patent with our internal patent attorney.

Q. At Marvell?

A. At Marvell.

Similarly, CMU argues that judgment as a matter of law should not be granted on the objective prong because Marvell allegedly did not review the prosecution history of the patents-in-suit. Dkt. No. 721 at 6, 9. But objective recklessness does not turn on a review of the prosecution history. *See, e.g.*, *Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 788 F.2d 1554, 1558-59 (Fed. Cir. 1986) (affirming the district court's judgment of no willfulness, even though

the defendant's patent counsel provided an opinion without reviewing the prior art or the prosecution history). Instead, the analysis under *Bard* requires an evaluation of the objective reasonableness of the defendant's claims and defenses. *Bard*, 682 F.3d at 1006-07. Here, CMU does not even attempt to argue that Marvell's non-infringement and invalidity contentions are objectively reckless. Under the correct legal standard, therefore, judgment as a matter of law on the objective prong should be granted. *Id.* at 1005.

B. No Reasonable Jury Could Find that Marvell Had the Required Subjective Intent for Willful Infringement

CMU's contention that Marvell intentionally copied the asserted patents is unsupported by the evidence. At best, CMU's expert, Dr. McLaughlin, makes conclusory assertions that Marvell "copied" the invention disclosed in the CMU patents. *See, e.g.*, 12/3/12 McLaughlin Tr. 82: 15-17 ("Marvell copied papers authored by Drs. Kavcic and Moura, and knew that the CMU patents followed those papers"). However, none of the alleged evidence actually involves copying from CMU's patents, let alone any particular Group I patent claim. Only two of the originally-asserted CMU patent claims remain at issue in this case. And there is absolutely no evidence tying any alleged copying to either one of these remaining claims. Accordingly, even if the Court finds that the objective prong has been satisfied, CMU cannot meet its burden of proof on the subjective prong.

1. CMU Acknowledges that Marvell Is a Technology Innovator

If anything, the evidence at trial confirms that there was never any copying during the development of Marvell's chips. Indeed, in a publicly released press notice, CMU identified Marvell as "a world leader in the development of storage communications and consumer silicon solutions" (DX-1338; 11/28/12 Cohon Tr. 224:16-23) – a description that CMU's President, Jared Cohon, testified that he fully agreed with at the time and still does to this day. 11/28/12

Cohon Tr. 220:14-225:25, 222:19-223:3, 224:3-225:13. CMU's President also agreed that it is completely appropriate for a company, like Marvell, to study and build on information about CMU inventions that have been disclosed to the public in patents, including the asserted patents in this case. 11/28/12 Cohon Tr. 206:8-15. In fact, it is the University's stated policy “[t]o facilitate wide transfer of useful inventions and writings to society.” DX-18; 11/28/12 Cohon Tr. 205:14-206:7. Merely studying and learning from the algorithm disclosed in the asserted patents cannot be the basis for a finding of subjective recklessness, particularly here, where one of the University's fundamental purposes is to encourage exactly that type of exchange.

2. CMU's Failure to Follow-Up on Its 2003 Licensing Letters Reinforced Marvell's Subjective Good Faith Intent

CMU's two August 5, 2003 letters to Marvell offering to license the asserted patents did nothing to alert Marvell that CMU believed it infringed. P-422, P-431. Neither of those letters say anything about infringement. *Id.* They do not identify any Marvell products or discuss any of the claims of the patents in suit. *Id.* And when Marvell did not pursue a license, CMU simply dropped the issue and sat silent for the next six years while Marvell continued to develop new chip designs and build its business.

No one at CMU raised any concerns with Marvell engineers or executives at any time after 2003. 11/28/12 Cohon Tr. 208:10-15 (Q. So in this matter of high priority for the university, did there ever come a time when you reached out for Marvell to talk to them about this theft that you thought had occurred? A. Me personally, no. Q. Anyone on your behalf. A. No.”); 226:4-10 (Q. “To your knowledge, nobody on behalf of Carnegie Mellon ever reached out to Marvell to indicate that Carnegie Mellon believed there was some problem with Marvell's hard chip – hard drive chip, isn't that right? A. So far as I know, that's correct.”). Dr. Kavcic spoke with Marvell engineers at industry meetings and conferences, but never raised any issue

about infringement of the asserted patents. 11/30/12 Kavcic Tr. 102:4-103:15, 226:3-7. And in the final months leading up to the filing of the complaint in this case, CMU did not even bother to call Marvell to see if the parties could come to an agreement without litigation. 11/28/12 Cohon Tr. 229:2-6 (Q. “[T]o your knowledge nobody at CMU picked up the phone and called anybody at Marvell prior to filing the lawsuit to talk about it, did they? A. To my knowledge, no.”). If anything, the 2003 letters – and CMU’s complete lack of follow-up – lulled Marvell into a false sense of security. There was never any indication before this lawsuit was filed to alert Marvell that CMU had any concerns regarding infringement.

3. CMU Has Failed to Show that Marvell Copied Any Part of the Asserted Claims

In support of its contentions on copying, CMU generally cites technical documents that were written by Marvell engineers for other engineers. They include weekly status reports and laboratory notebooks involving mathematical equations. *See P-196, P-227, P-279, P-280.* Without attempting to explain the technical details of these documents, CMU instead has focused on various references to Dr. Kavcic’s name, rather than any particularized evidence that Marvell copied the patented technology in any of its accused chip or simulator designs. *See 12/3/12 McLaughlin Tr. 56:18-57:3 (“Kavcic model”); 57:4-15 (“simplified Kavcic PP”); 57:16-58: 15 (“develop sub-optimal media noise detector based on Kavcic model”); 65:14-66:9 (“Kavcic PP. PP means, post processor”); 71:13-72:2 (“sub-optimal version of Kavcic’s detector”); 72:10-73:12 (“Kavcic PP” file name).* However, mere references to “Kavcic” do not establish that Marvell intentionally copied any aspect of the asserted Group I claims. Indeed, if anything, the repeated references to “sub-optimal,” “simplified,” and “PP” (meaning “post processor”) distinguish the complex Kavcic model from the solutions that Marvell was working on and ultimately incorporated into its commercial chips.

As the Court noted in its order granting Marvell’s motion for summary judgment on non-infringement of the Group II claims, “the flaw with CMU’s position is that admissions by Marvell . . . do not establish that a specific claim element, much less an entire claim, has been copied The clear reason is that each claim protects different technological territory, and some claims may be infringed while others are not.” Dkt. No. 443 (Opinion Re: Non-Infringement of Group II Claims) at 10. Because CMU has no support tying any of its allegations to the specific claims at issue, CMU’s copying story and alleged evidence are in fact not relevant to the subjective intent prong for willfulness.

Likewise, Marvell’s knowledge of the asserted patents and evidence that its engineers studied the Kavcic model is insufficient to show subjective intent to copy. District courts have consistently found no willful infringement as a matter of law in cases like this one. For example, in *Cohesive Technologies, Inc. v. Waters Corp.*, 526 F. Supp. 2d 84, 104-07 (D. Mass. 2007) *aff’d in part, vacated in part and rev’d in part on other grounds*, 543 F.3d 1351 (Fed. Cir. 2008) (affirming judgment of no willfulness), the district court set aside the jury’s verdict and granted the defendants’ post-trial motion for judgment as a matter of law despite undisputed evidence that the defendants (1) knew of the patent’s existence, and (2) had actually obtained a prototype of the patented invention during development of their infringing product. *Id.* at *17-18. The court found that the defendants were entitled to judgment because the patentee failed to adduce any evidence showing that the defendants had acted with reckless intent. *Id.* at *16.

Similarly, in *TGIP, Inc. v. AT&T Corp.*, 527 F. Supp. 2d 561, 579 (E.D. Tex. 2007), the Court concluded that the patentee’s pre-litigation notice letters to the defendant were nothing more than a mere “scintilla of the evidence needed to meet the clear and convincing standard” under *Seagate*, and therefore, no reasonable jury could find that the defendants had acted

recklessly. *See also Informatica Corp. v. Bus. Objects Data Integration, Inc.*, 527 F. Supp. 2d 1076, 1083 (N.D. Cal. 2007) (uncontested evidence that defendant took no action after being notified of alleged infringement insufficient to show recklessness); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 585 F. Supp. 2d 636, 641 (D. Del. 2008) (“[P]roof of willful infringement permitting enhanced damages requires at least a showing of objective recklessness.”) (quoting *Seagate*, 497 F.3d at 1371); *Goss Int'l Americas, Inc. v. Graphic Mgmt. Assocs., Inc.*, 739 F. Supp. 2d 1089, 1126 (N.D. Ill. 2010) (“[A]ttempts to keep abreast of a competitor’s technology and intellectual property is not objectively reckless behavior, but fair and reasonable commercial behavior.”) (internal citations omitted).

4. The Testimony of Marvell’s Witnesses Regarding the Development of Their Invention Conclusively Rebuts Any Allegation of Copying

Drs. Zining Wu and Gregory Burd – the Marvell engineers primarily responsible for the development of the accused chips – testified clearly and credibly at trial that they did not copy the CMU patents. 12/11/2012 Wu Tr. at 326:14-327:7; 12/17/2012 Burd Tr. at 126:5-13. Although both were aware of Dr. Kavcic’s publications, they concluded that no matter what merit or impact Dr. Kavcic’s work had in the academic field, it was simply “too complicated” to implement in a commercial product, and therefore Marvell was “not able to implement” it in the accused chips. *Id.* at 163:1-2. For example, Dr. Wu testified that in or around 2001, after reading Dr. Kavcic’s paper on the media noise processor, he “concluded Dr. Kavcic’s paper cannot be implemented. It is just too complicated.” 12/11/2012 Wu Tr. at 285:2-7. Specifically, Dr. Wu explained:

Q. What, if any -- what, if any explanation did you have back in 2001, as to Dr. Kavcic’s papers?

A. My understanding at that time is Dr. Kavcic proposed a method to deal with media noise problem in the Viterbi that required very complicated Viterbi. We don’t have, I don’t think that can be utilized, cannot be implemented at all. So

that's why we developed our post processor technology, that's totally different, that can be implemented.

Q. Can you explain what you mean by, back in the time Dr. Kavcic had a complicated Viterbi?

A. It, it's talking to his paper to build a complicated branch metric for each branch of the Viterbi, plus to implement his metric, we need 128 state Viterbi. That is very complicated. We are using 16 state Viterbi, which is much simpler to use, and each Viterbi branch, it was a simple Viterbi branch metric that has been used throughout the years, since Dr. Viterbi proposed that in 1970's, though. So's that much simpler. We used that simple Viterbi, combined with the post processor.

12/11/2012 Wu Tr. at 299:20-300:13. Dr. Burd also did a "complexity analysis for implementing Kavcic Viterbi in hardware" but determined that it was "too large, too complicated. It would be too slow. So we just cannot implement it and sell to our customers."

12/17/2012 Burd Tr. at 137:16-138:2; *see also* 139:14-22 ("it's too complicated, and we just cannot sell it to the customer at a reasonable cost").

Because Dr. Kavcic's methods were a "dead end" (12/11/2012 Wu Tr. at 321:21), Marvell instead pursued alternative, non-infringing approaches. "[W]e developed our own post processor. It's that MNP." 12/11/2012 Wu Tr. at 285:2-7. Marvell understood that Dr. Kavcic's paper did not use a post processor. 12/17/2012 Burd Tr. at 138:19-23; *see also* 12/11/2012 Wu Tr. at 302:15-19 ("Kavcic never talk[ed] about post processor"). Similarly, for the NLV, Marvell "found a way to move the noise whitening filter out of Viterbi. . . the speed bottleneck would be , y-y squared, or sigma square, in the branch metric calculation. So this is a simple squaring operation. Without that, we were already very familiar with, we know how to implement this single squaring and make it a fact. If we implement a complicated branch metric fact Dr. Kavcic called, we cannot make the circuit fact. So that's what we mean, the speed bottleneck would be improved by moving the filter out of the Viterbi." 12/11/2012 Wu Tr. at 321:12-322:8.

While CMU speculates that the repeated “Kavcic” references in Marvell’s documents signified that Marvell was copying (11/28/2012 CMU Opening Statement Tr. at 98-99; *see also* CMU’s reliance on P-196, P-227, P-279, P-280), Drs. Burd and Wu clarified the meaning of such references. Dr. Wu noted that the “Kavcic Viterbi” was so named because “Dr. Kavcic made the media noise, Dr. Kavcic published a paper about media noise. It’s actually a common practice to use the author’s name to refer to that problem.” 12/11/2012 Wu Tr. at 307:3-308:2. Similarly, the “KavcicPP” was the “post-processor solution to the Kavcic *problem*” (12/12/2012 Wu Tr. at 29:15-19 (emphasis added); 12/17/2012 Burd Tr. at 139:4-10 (“Kavcic kind of stood for something which takes media noise into account”))—*not* an implementation of the Kavcic *method* claimed in the asserted patents.

The testimony also demonstrates that Marvell had nothing to hide. Marvell disclosed Dr. Kavcic’s patents and papers to the U.S. Patent Office when it applied for its own patent on the non-infringing alternative MNP that Drs. Burd and Wu had developed. 12/11/2012 Wu Tr. at 324:11-15; 12/12/2012 Wu Tr. at 90:1-15. Indeed, contrary to CMU’s insinuations, Dr. Wu testified that Marvell’s choice to change the name of the simulator from “KavcicPP” to “MNP” was not a bad faith attempt to cover its tracks, but instead was an effort to “reduce the confusion” because the simulator was actually Marvell’s simulator, not Dr. Kavcic’s. *Id.*

Here, CMU has failed to introduce *even a scintilla* of evidence – much less clear and convincing evidence – that a reasonable jury could rely on to find reckless intent under the subjective prong of the heightened *Seagate* standard. Without support for its copying allegation, CMU cannot prove subjective intent, and judgment as a matter of law of no willful infringement should be granted for this additional reason.

IV. CONCLUSION

For the foregoing reasons, Marvell respectfully requests that the Court grant its Renewed Motion for Judgment as Matter of Law of No Willful Infringement.

Dated: December 19, 2012

Respectfully submitted,

/s/ John E. Hall

John E. Hall
Timothy P. Ryan
ECKERT SEAMANS CHERIN &
MELLOTT, LLC
U.S. Steel Tower
600 Grant Street, 44th Floor
Pittsburgh, PA 15219
Phone: (412) 566-6000
Fax: (412) 566-6099
jhall@eckertseamans.com
tryan@eckertseamans.com

/s/ Joseph Milowic III

Edward J. DeFranco (*pro hac vice*)
Faith Gay (*pro hac vice*)
Raymond Nimrod (*pro hac vice*)
David Radulescu (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
51 Madison Avenue, 22nd Floor
New York, New York 10010
Phone: (212) 849-7000
Fax: (212) 849-7100
eddefranco@quinnmanuel.com

Steven G. Madison (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
865 S. Figueroa St., 10th Floor
Los Angeles, California 90017
Phone: (213) 443-3000
Fax: (213) 443-3100
stevemadison@quinnmanuel.com

Kevin P.B. Johnson (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
555 Twin Dolphin Drive., 5th Floor
Redwood Shores, California 94065
Phone: (650) 801-5000
Fax: (650) 801-5100
kevinjohnson@quinnmanuel.com

*Attorneys for Defendants, Marvell Technology Group,
Ltd. and Marvell Semiconductor, Inc.*

CERTIFICATE OF SERVICE

I hereby certify that on December 19, 2012, the foregoing was filed electronically on ECF. I also hereby certify that on December 19, 2012, this filing will also be served on counsel for CMU by electronic mail.

/s/ John E. Hall

John E. Hall
Timothy P. Ryan
ECKERT SEAMANS CHERIN & MELLOTT, LLC
U.S. Steel Tower
600 Grant Street, 44th Floor
Pittsburgh, PA 15219
Phone: (412) 566-6000
Fax: (412) 566-6099
jhall@eckertseamans.com
tryan@eckertseamans.com

David C. Radulescu (*pro hac vice*)
QUINN EMANUEL URQUHART & SULLIVAN, LLP
51 Madison Avenue, 22nd Floor
New York, New York 10010
(212) 849-7000 Telephone
(212) 849-7100 Facsimile
davidradulescu@quinnmanuel.com

*Attorneys for Defendants,
Marvell Technology Group, Ltd. and
Marvell Semiconductor, Inc.*